9-5: The Factor Theorem

Warm-up: Let $f(x) = 3x^2 - 40x + 48$.

1. Which of the given polynomials is a factor of $f(x)$?

a. $x - 2$ b. $x - 3$ c. $x - 4$ d. $x - 6$ e. $x - 12$ f. $x - 24$

2. Which of the given values equals 0?

a. $f(2)$ b. $f(3)$ c. $f(4)$ d. $f(6)$ e. $f(12)$ f. $f(24)$

Factor Theorem:

Factor-Solution-Intercept Equivalence Theorem:

1.

2.

3.

4.

5.

Example 1: Factor $12x^3 - 41x^2 + 13x + 6$ by first finding one zero of the polynomial using your graphing calculator and then dividing to find the others.

Example 2: Find an equation for a polynomial function p with zeros 2, -4, and $\frac{4}{7}$.

Example 3: Find four linear factors of a polynomial $t(r)$ if $t(-2) = 0$, $t(4) = 0$, $t(6) = 0$, and $t\left(-\frac{4}{3}\right) = 0$.

Homework:

"Nobody will believe in you unless you believe in yourself." - Liberace